Amendment to the Claims

The following listing of claims will replace all prior versions and listings of claims.

<u>Listing of Claims:</u>

1-124. (Canceled)

125. (Currently Amended) A method of diagnosing a disorder in a patient, said method comprising determining, in a sample from said patient, the ~~level~~ <u>presence</u> of a <u>mutated hChaT nucleic acid that is different from the hChaT</u> nucleic acid encoding a polypeptide comprising the amino acid sequence of SEQ ID NO: 2, wherein a ~~level~~ <u>the presence</u> of said <u>mutated hChaT</u> nucleic acid in said sample from said patient that differs from the ~~level~~ <u>hChaT nucleic acid encoding a polypeptide comprising the amino acid sequence of SEQ ID NO: 2</u> in a control sample indicates that said patient has a disorder.

126. (Previously Presented) The method of claim 125 wherein said disorder involves the cholinergic system.

127. (Previously Presented) The method of claim 126, wherein the patient suffers from a nervous system disorder.

128. (Currently Amended) The method of claim 127, wherein said nervous system disorder is selected from the group consisting of: amyotrophic lateral sclerosis, Alzheimer<u>'s</u> disease, Parkinson's Disease, senile dementia, multi-infarct dementia, familial disautonomia, Huntington's Disease, mental retardation, memory loss, and myasthenia gravis.

129. (Currently Amended) The method of claim 126, wherein said disorder is selected from the group consisting of: gut and GI disorders, cord disorders, ~~including movement, continence and sensation,~~ stem disorders, ~~including sleep, blood pressure, respiration, and balance,~~ hypothalamus disorders, ~~including temperature, respiration, and endocrine function,~~ and limbic system disorders, ~~including schizophrenia, memory disorders, and dementia.~~

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130. (Currently Amended) A method of diagnosing a disorder in a patient, said method comprising determining, in a sample from said patient, the ~~level~~ presence of a mutated hChaT nucleic acid that is different from the hChaT nucleic acid encoding a polypeptide comprising the amino acid sequence encoded by the cDNA contained in Deposit No. 75856, wherein ~~a level~~ the presence of said mutated hChaT nucleic acid in said sample from said patient that differs from the ~~level~~ hChaT nucleic acid encoding a polypeptide comprising the amino acid sequence encoded by the cDNA contained in Deposit No. 75856 in a control sample indicates that said patient has a disorder.

131. (Previously Presented) The method of claim 130 wherein said disorder involves the cholinergic system.

132. (Previously Presented) The method of claim 131, wherein the patient suffers from a nervous system disorder.

133. (Currently Amended) The method of claim 132, wherein said nervous system disorder is selected from the group consisting of: amyotrophic lateral sclerosis, Alzheimer's disease, Parkinson's Disease, senile dementia, multi-infarct dementia, familial disautonomia, Huntington's Disease, mental retardation, memory loss, and myasthenia gravis.

134. (Currently Amended) The method of claim 131, wherein said disorder is selected from the group consisting of: gut and GI disorders, cord disorders, ~~including movement, continence and sensation,~~ stem disorders, ~~including sleep, blood pressure, respiration, and balance,~~ hypothalamus disorders, ~~including temperature, respiration, and endocrine function,~~ and limbic system disorders, ~~including schizophrenia, memory disorders, and dementia.~~

135. (Previously Presented) A method of diagnosing a disorder in a patient, said method comprising determining, in a sample from said patient, the level of a polypeptide of amino acid sequence SEQ ID NO: 2, wherein a level of said polypeptide in said sample from said patient that differs from the level in a control sample indicates that said patient has a disorder.

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136. (Previously Presented) The method of claim 135 wherein said disorder involves the cholinergic system.

137. (Previously Presented) The method of claim 136, wherein the patient suffers from a nervous system disorder.

138. (Currently Amended) The method of claim 137, wherein said nervous system disorder is selected from the group consisting of: amyotrophic lateral sclerosis, Alzheimer's disease, Parkinson's Disease, senile dementia, multi-infarct dementia, familial disautonomia, Huntington's Disease, mental retardation, memory loss, and myasthenia gravis.

139. (Currently Amended) The method of claim 136, wherein said disorder is selected from the group consisting of: gut and GI disorders, cord disorders, including movement, continence and sensation, stem disorders, including sleep, blood pressure, respiration, and balance, hypothalamus disorders, including temperature, respiration, and endocrine function, and limbic system disorders, including schizophrenia, memory disorders, and dementia.

140. (Currently Amended) A method of diagnosing a disorder in a patient, said method comprising determining, in a sample from said patient, the level of a polypeptide comprising the amino acid sequence encoded by the cDNA contained in Deposit No. 75856, wherein a level of said nucleic acid polypeptide in said sample from said patient that differs from the level in a control sample indicates that said patient has a disorder.

141. (Previously Presented) The method of claim 140 wherein said disorder involves the cholinergic system.

142. (Previously Presented) The method of claim 141, wherein the patient suffers from a nervous system disorder.

143. (Currently Amended) The method of claim 142, wherein said nervous system disorder is selected from the group consisting of: amyotrophic lateral sclerosis, Alzheimer's disease, Parkinson's Disease, senile dementia, multi-infarct dementia,

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familial disautonomia, Huntington's Disease, mental retardation, memory loss, and myasthenia gravis.

144. (Previously Presented) The method of claim 141, wherein said disorder is selected from the group consisting of: gut and GI disorders, cord disorders, ~~including movement, continence and sensation~~, stem disorders, ~~including sleep, blood pressure, respiration, and balance~~, hypothalamus disorders, ~~including temperature, respiration, and endocrine function~~, and limbic system disorders, ~~including schizophrenia, memory disorders, and dementia~~.

145-168. (Canceled)

169. (New) The method of claim 129 wherein said cord disorders are selected from the group consisting of: movement, continence and sensation disorders.

170. (New) The method of claim 129 wherein said stem disorders are selected from the group consisting of: sleep, blood pressure, respiration, and balance disorders.

171. (New) The method of claim 129 wherein said hypothalamus disorders are selected from the group consisting of: temperature, respiration and endocrine function disorders.

172. (New) The method of claim 129 wherein said limbic system disorders are selected from the group consisting of: schizophrenia, memory disorders, and dementia disorders.

173. (New) The method of claim 134 wherein said cord disorders are selected from the group consisting of: movement, continence and sensation disorders.

174. (New) The method of claim 134 wherein said stem disorders are selected from the group consisting of: sleep, blood pressure, respiration, and balance disorders.

175. (New) The method of claim 134 wherein said hypothalamus disorders are selected from the group consisting of: temperature, respiration and endocrine function disorders.

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176. (New) The method of claim 134 wherein said limbic system disorders are selected from the group consisting of: schizophrenia, memory disorders, and dementia disorders

177. (New) The method of claim 139 wherein said cord disorders are selected from the group consisting of: movement, continence and sensation disorders.

178. (New) The method of claim 139 wherein said stem disorders are selected from the group consisting of: sleep, blood pressure, respiration, and balance disorders.

179. (New) The method of claim 139 wherein said hypothalamus disorders are selected from the group consisting of: temperature, respiration and endocrine function disorders.

180. (New) The method of claim 139 wherein said limbic system disorders are selected from the group consisting of: schizophrenia, memory disorders, and dementia disorders.

181. (New) The method of claim 144 wherein said cord disorders are selected from the group consisting of: movement, continence and sensation disorders.

182. (New) The method of claim 144 wherein said stem disorders are selected from the group consisting of: sleep, blood pressure, respiration, and balance disorders.

183. (New) The method of claim 144 wherein said hypothalamus disorders are selected from the group consisting of: temperature, respiration and endocrine function disorders.

184. (New) The method of claim 144 wherein said limbic system disorders are selected from the group consisting of: schizophrenia, memory disorders, and dementia disorders.

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